REMARKS

Applicants respectfully request that this After-Final response be entered. It is submitted that no further search is required since the Examiner has already searched for the emitter material loading. Reexamination of the above-identified application is respectfully requested.

Status of the Claims

Claims 1-3, 5-8 and 12-23 are pending in the application.

Claims 1, 3, 5, and 15 have been amended.

§112 Rejections

Claims 3 and 5 were rejected under 35 U.S.C. §112, second paragraph, as being indefinite. Claims 3 and 5 are amended to depend from claim 1. Accordingly, it is respectfully requested that the §112 rejections be withdrawn.

35 U.S.C § 102 and § 103 Rejections

Claims 15, 17, 19, and 21 stand rejected under 35 U.S.C §102 (b) as being anticipated by Yasuda, et al. (U.S. Patent No. 5,692,586).

Claims 1, 3, 5, 8, 12, and 13 stand rejected under 35 U.S.C §102(b) as being anticipated by Thomas (U.S. Patent No. 3,003,077)

Claims 1-5, 8, 10, 11, and 13 stand rejected under 35 U.S.C §103(a) as being unpatentable over Thomas.

Claims 1, 3, 5, 12, and 20 stand rejected under 35 U.S.C §103(a) as being unpatentable over Yasuda, et al.

Claims 8, 16, and 18 stand rejected under 35 U.S.C §103(a) as being unpatentable over Yasuda, et al. in view of Thomas.

Claims 1, 6, 7, 15, and 22 stand rejected under 35 U.S.C §103(a) as being unpatentable over Van Kemenade, et al. (U.S. Patent No. 6,049,164) in view of Yasuda, et al.

Claim 14 stands rejected under 35 U.S.C §103(a) as being unpatentable over Thomas and further in view of "Admitted Prior Art" and Clark (U.S. Patent No. 5,864,209).

Claim 23 stands rejected under 35 U.S.C §103(a) as being unpatentable over Van Kemenade, et al. and further in view of "Admitted Prior Art" and Clark.

For the reasons outlined below, it is submitted that the claims are patentable over the references of record.

Claim 1 recites a discharge lamp including an electrode including a current carrying wire and a coil including first, second, and third coiled structures. The second coiled structure is formed by winding the first coiled structure around a second cylindrical member without appreciable overlapping of the coils and has at least 80 turns per inch. The third coiled structure is formed on a member having a diameter of at least 1.2 mm. The amount of

emitter material is from 9-16 mg per 11.5 mm length of the coil.

Amendments to the specification are supported by page 8, para [0028].

The references of record do not disclose or fairly suggest such a discharge lamp. Thomas discloses winding a coiled structure on a third mandrel which is 26 mils. This is equivalent to about 0.6mm, much less than the at least 1.2 mm presently claimed. None of the references disclose a coil in which the amount of emitter material is from 9-16 mg per 11.5 mm length of the coil.

It has unexpectedly been found that by providing a secondary coil of a high TPI and winding it on a third mandrel of large diameter, the amount of emitter material per unit length of secondary coil and the stability of the electrode can be improved. This is not taught or suggested by the references of record.

Thomas is concerned with loading the emitter into the hollow core of the primary winding. There is no suggestion that the secondary winding could be used to increase the loading. Thomas uses a large spacing between the turns in the secondary winding. At 105 TPI and a width of primary coil of 2.5 +(2x1.25) =5 mils, the secondary winding has a density of only 50%. In the present case, the winding is chosen to be close to but without appreciable overlapping, i.e. a density approaching 100% (see page 9, para [0030]). This has been found to increase the loading which can be achieved. Applicants have found that loadings of 9-16 mg per standard 11.5 mm length of the coil have significantly improved properties over conventional lamps, where the maximum achievable loading is 7-8 mg per 11.5 mm per standard coil length. The coil of Thomas, with its wide spacing and low coil density would not support the presently claimed emitter loading.

The Examiner argues that it would have been obvious to make Thomas's third cylindrical member larger. However Thomas stresses the importance of using fine wire for the mandrels. There is no suggestion that using a larger mandrel would achieve a higher loading of emitter.

The Examiner further argues that Yasuda discloses a second coiled structure having at least 80 turns per inch. Applicants respectfully traverse. Yasuda, et al. disclose a secondary coil in which the pitch is 0.2 mm. This corresponds to only about ten turns per inch, not the at least 80 currently claimed. Further, Yasuda's third mandrel is only 1mm.

Van Kemenade fails to supply the deficiencies of Yasuda, et al. There is no suggestion in Van Kemenade of providing a second coiled structure with at least 80 turns per inch, a third coiled structure with a diameter of at least 1.2 mm and an amount of emitter

material of from 9-16mg per 11.5 mm length of the coil.

Accordingly, it is submitted that claim 1 and claims 3, 5-8, and 12-13 dependent therefrom, distinguish patentably and unobviously over the references of record.

Claim 14 recites a discharge lamp with a first electrode including a current carrying wire and a coil including a first coiled structure formed by winding a overwind wire around a first cylindrical member. A second coiled structure is formed by winding the first coiled structure around a second cylindrical member. The second coiled structure has at least 80 turns per inch. A third coiled structure is formed by winding the second coiled structure around a third cylindrical member. An emitter material is deposited on the coil. The amount of emitter material is 10-15mg/30 mm length of secondary coil.

The references of record do not disclose or fairly suggest such as discharge lamp. The Examiner acknowledges that Thomas does not disclose such high levels of emitter material. Thomas discloses a triple coil structure but makes no reference to the amount of emitter material. Thomas's wide spacing between the turns of the second coil would not support such a loading in the second coil. The Examiner also states that "Clarke teaches that a lamp having a triple coil wire [has] a significantly increased effective and useful life due to an increase in the amount of emitter material provided..." However, Clarke fails to suggest how much emitter is provided. Further, Clarke is comparing the results with lamps which do not have a triple coil structure. Thus, the "increase" mentioned by Clarke has no bearing in the present context, where the art discussed in the application as having a maximum of 7-8 mg of emitter material already has a triple coil structure. Thus, Clarke does not add any advantage to Thomas or to the other art discussed. Nor does Clarke disclose a second coiled structure having at least 80 turns per inch.

Accordingly, it is submitted that claim 14 distinguishes patentably and unobviously over the references of record.

Claim 15 recites a method for forming a coil for a fluorescent lamp. The method includes winding a first coiled structure around a second cylindrical member, without appreciable overlapping of coils, to form a second coiled structure having 80-130 turns per inch. The second coiled structure is wound around a third cylindrical member to form a third coiled structure. The third structure has a diameter of at least 1 mm. The third coiled structure is coated with an emitter mix which, when activated, emits electrons when heated. The amount of emitter material is 10-15mg/30 mm length of secondary coil.

Yasuda, et al. makes no suggestion of forming a coiled structure and coating with an emitter mix at 10-15mg/30 mm length of secondary coil. Yasuda discloses a secondary coil in

which the pitch is 0.2 mm. This corresponds to about ten turns per inch. The present applicants have found that by providing a secondary coil of at least 80 turns per inch, loadings of 10-15mg/30 mm length of secondary coil can be sustained, which is much higher than that which could be achieved by prior methods.

Van Kemenade fails to supply the deficiencies of Yasuda, et al. There is no suggestion in Van Kemenade of providing a second coiled structure with at least 80 turns per inch, a third coiled structure with a diameter of at least +1 mm and an amount of emitter material of from 10-15mg/30 mm length of secondary coil.

Accordingly, it is submitted that claim 15 and claims 16-23 dependent therefrom distinguish patentably and unobviously over the references of record.

CONCLUSION

For the reasons set forth above, it is submitted that claims 1, 3, 5-8, and 12-23 distinguish patentably over the reference of record. An early allowance of these claims is earnestly solicited.

Respectfully submitted,

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